

What is claimed is

1. A release agent for non-substrate liquid crystal display element, comprising

(a) 2-20 wt% of compounds selected from the group consisting of silicone, fluorine compounds and mixtures thereof; and

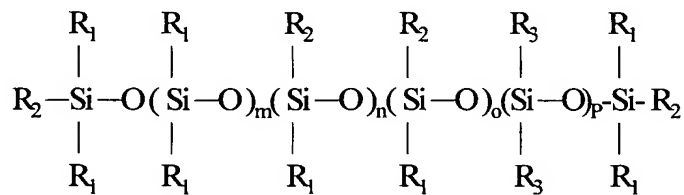
(b) 0.5-30 wt% (based on the weight of (a)) of release modifier;

wherein the release agent is applied to the assisting substrates in the process of non-substrate liquid crystal display, so the assembled liquid crystal display element can be separated from the assisting substrates and a non-substrate liquid crystal display element is acquired.

2. The release agent for non-substrate liquid crystal display element according to Claim 1, wherein said release agent comprises (a) 3-7 wt% of compounds selected from the group consisting of silicone, fluorine compounds and mixtures thereof; and (b) 3-20 wt% (based on the weight of (a)) of release modifier.

3. The release agent for non-substrate liquid crystal display element according to Claim 1, wherein said release modifier is silicone release modifier.

4. The release agent for non-substrate liquid crystal display element according to Claim 3, wherein said silicone release modifier is a silicone compound having the following linear molecular structure:



(I)

wherein R_1 is C_{1-3} alkyl; R_2 is hydrogen atom, C_{1-3} alkyl or C_{2-10} alkenyl; R_3 is C_{1-3}

5 alkyl or phenyl; said silicone compound has molecular weight of 3,500 ~ 30,000; when

calculated by molecular weight, $(-\text{Si}(\text{R}_1)(\text{R}_1)\text{O}-)_m$ accounts for 60 ~ 95% of silicone compound, $(-\text{Si}(\text{R}_1)(\text{R}_2)\text{O}-)_n$ accounts for 0 ~ 10%, $(-\text{Si}(\text{R}_1)(\text{R}_2)\text{O}-)_0$ accounts for 0 ~ 10%, and $(-\text{Si}(\text{R}_3)(\text{R}_3)\text{O}-)_p$ accounts for 0 ~ 10%.

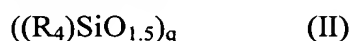
5. The release agent for non-substrate liquid crystal display element according to Claim 4, wherein R_1 is methanyl.

6. The release agent for non-substrate liquid crystal display element according to Claim 4, wherein R_2 is hydrogen atom, vinyl or methanyl.

7. The release agent for non-substrate liquid crystal display element according to Claim 4, wherein R_3 is methanyl or phenyl.

8. The release agent for non-substrate liquid crystal display element according to Claim 4, wherein when calculated by the molecular weight, $(-\text{Si}(\text{R}_1)(\text{R}_1)\text{O}-)_m$ accounts for 85 ~ 95% of silicone compound, $(-\text{Si}(\text{R}_1)(\text{R}_2)\text{O}-)_n$ accounts for 0 ~ 5%, $(-\text{Si}(\text{R}_1)(\text{R}_2)\text{O}-)_0$ accounts for 0 ~ 5%, and $(-\text{Si}(\text{R}_3)(\text{R}_3)\text{O}-)_p$ accounts for 0 ~ 5%.

9. The release agent for non-substrate liquid crystal display element according to Claim 3, wherein said silicone release modifier is a compound having the following cage molecular structure:



5 wherein R_4 is hydrogen atom or C_{2-10} alkenyl; and q is an integer from 8 to 16.

10. The release agent for non-substrate liquid crystal display element according to Claim 9, wherein R_4 is hydrogen atom or vinyl.

11. The release agent for non-substrate liquid crystal display element according to Claim 1, wherein said release agent further comprises a catalyst which includes platinum catalyst, sulfuric acid, hydrochloride acid, or acetic acid.

12. The release agent for non-substrate liquid crystal display element according to

Claim 1, wherein said release agent further comprises a solvent which includes toluene, n-heptane, methylethyl ketone or mixture thereof.

13. The release agent for non-substrate liquid crystal display element according to Claim 1, wherein said release agent further comprises an inhibitor, which includes alkynol compound or peroxide compound.

14. The release agent for non-substrate liquid crystal display element according to Claim 1, wherein said release agent further comprises proper amount of microparticles, which include nanometer grade SiO_2 , TiO_2 or organic polymer particles.

15. The release agent for non-substrate liquid crystal display element according to Claim 1, wherein said assisting substrates comprise glass, wafer, Teflon, ceramic or polymer substrate.

16. The release agent for non-substrate liquid crystal display element according to Claim 1, wherein said silicon is a silicon polymer comprises Si-H and Si-CH=CH₂ with molar ratio of Si-H to Si-CH=CH₂ between 1.2 and 4.8 and molecular weight between 100,000 and 1,000,000.

17. The release agent for non-substrate liquid crystal display element according to Claim 16, wherein said silicon is a silicon polymer comprises Si-H and Si-CH=CH₂ with molar ratio of Si-H to Si-CH=CH₂ between 2.0 and 3.5 and molecular weight between 300,000 and 700,000.

18. The release agent for non-substrate liquid crystal display element according to Claim 1, wherein said fluorine compound comprises Teflon, silicon fluoride, and fluothane.